

Claim 106 (currently amended): The laser scanning system of claim ~~102~~ 129, wherein the volume of said housing is less than 2000 cubic inches.

Claim 107 (currently amended): The laser scanning system of claim ~~102~~ 129, wherein the volume of said housing is less than 1650 cubic inches.

Claim 108 (currently amended): The laser scanning system of claim ~~102~~ 129, wherein said 3-D scanning volume is greater than 400 cubic inches.

Claim 109 (currently amended): The laser scanning system of claim ~~102~~ 129, wherein resolution of a bar code symbol that said laser scanning planes can resolve is on the order of 0.006 inches wide.

Claim 110 (currently amended): The laser scanning system of claim ~~102~~ 129, wherein said laser scanning planes are quasi-orthogonal.

Claim 111 (currently amended): The laser scanning system of claim ~~102~~ 129, wherein said plurality of light directing elements comprise a plurality of multi-faceted volume holographic elements.

Claim 112 (currently amended): The laser scanning system of claim 111, wherein ~~said~~ a plurality of multi-faceted volume holographic elements are supported by a scanning disc.

Claim 113 (currently amended): ~~The laser scanning system of claim 10]~~ A laser scanning system comprising:

a housing having a first portion and a second portion, said first portion having a bottom window, and said second portion having a side window; and

a plurality of laser scanning stations disposed within said housing,

wherein each said laser scanning station includes a light beam source and corresponding groups of light bending mirrors disposed within said housing, that cooperate with a plurality of

light directing elements to produce laser scanning planes that are projected within a 3-D scanning volume disposed above said bottom window and adjacent said side window;

wherein a first set of said plurality of laser scanning stations, are disposed within said first portion of said housing, and produce a first set of laser scanning planes passing through said bottom window;

wherein said first portion of said housing has a depth of less than 5 inches,

wherein some of said groups of light bending mirrors cooperate with light directing elements that have high elevation angle characteristics, and other groups of light bending mirrors cooperate with light directing elements that have low elevation angle characteristics.

Claim 114 (currently amended): The laser scanning system of claim ~~402~~ 113, wherein some of said groups of light bending mirrors cooperate with light directing elements that have left skew angle characteristics, and other groups of light bending mirrors cooperate with light directing elements that have right skew angle characteristics.

Claim 115 (currently amended): The laser scanning system of claim ~~402~~ 113, wherein said bottom window has a substantially horizontal orientation and said side window has a substantially vertical orientation.

Claim 116 (currently amended): The laser scanning system of claim ~~402~~ 113, wherein said plurality of laser scanning stations comprise four laser scanning stations.

Claim 117 (currently amended): The laser scanning system of claim ~~402~~ 113, wherein some of said light bending mirrors having a different number of vertices than do other light bending mirrors.

Claim 118 (currently amended): The laser scanning system of claim ~~402~~ 113, wherein geometry, placement and orientation of said light bending mirrors are optimized to satisfy physical constraints with respect to said housing.

Claim 119 (currently amended): The laser scanning system of claim ~~102~~ 113, wherein each said laser scanning station includes light collection optical elements comprising a parabolic mirror and a photodetector.

Claim 120 (previously presented): The laser scanning system of claim 119, wherein said photodetector is substantially disposed above incidence of light beams onto said light directing elements.

Claim 121 (currently amended): The laser scanning system of claim ~~104~~ 113, wherein said bottom window has a substantially horizontal orientation and said side window has a substantially vertical orientation, and wherein said second set of laser scanning stations comprise a single laser scanning station that produces laser scanning planes passing through said side window.

Claim 122 (currently amended): The laser scanning system of claim ~~102~~ 113, wherein said bottom and side windows include a spectral filtering subsystem that transmits a narrow band of spectral components of light including the light associated with said laser scanning planes.

Claim 123 (currently amended): The laser scanning system of claim ~~102~~ 113, wherein said light beam source for a given laser scanning station includes a visible laser diode, at least one collimating lens and a diffractive optical element producing S polarized light.

Claim 124 (previously presented): The laser scanning system of claim 123, wherein said collimating lens and diffractive optical element substantially eliminate astigmatic characteristics of light produced by the visible laser diode.

Claim 125 (currently amended): The laser scanning system of claim ~~102~~ 113, which further comprises light collection optical elements coupled to signal processing circuitry that has multiple decoding channels.

Claim 126 (previously presented): The laser scanning system of claim 125, which further comprises a mechanism for linking, in each decoding channel, a particular optical path to a given scan data signal.

Claim 127 (previously presented): The laser scanning system of claim 125, which further comprises a mechanism for analyzing scan data signal fragments over multiple decoding channels to identify bar code symbols therein.

Claim 128 (currently amended): The laser scanning system of claim ~~102~~ 129, wherein said first portion of the housing is disposed under a counter in a point of sale application.

Claim 129 (currently amended): ~~The laser scanning system of claim 102,~~ A laser scanning system comprising:

a housing having a first portion and a second portion, said first portion having a bottom window, and said second portion having a side window; and

a plurality of laser scanning stations disposed within said housing,

wherein each said laser scanning station comprises a light beam source and corresponding groups of light bending mirrors disposed within said housing, that cooperate with a plurality of light directing elements to produce laser scanning planes that are projected within a 3-D scanning volume disposed above said bottom window and adjacent said side window;

wherein a first set of said plurality of laser scanning stations, are disposed within said first portion of said housing, and produce a first set of laser scanning planes passing through said bottom window;

wherein said first portion of said housing has a depth of less than 5 inches; and

wherein a given laser scanning station produces scan lines that pass through said ~~second~~ side window, said given laser scanning station comprising a collimating lens that cooperates with said ~~a~~ plurality of holographic optical elements to increase focal distance of scan lines passing through said ~~second~~ side window, thereby allowing said plurality of holographic optical elements to be used in producing scan lines that pass through both first and ~~second~~ side windows.

Claim 130 (previously presented): The laser scanning system of claim 129, wherein said holographic optical elements are integrated in a rotating disc, and wherein said photodetector is mounted directly above the edge of the rotating disc.

Claim 131 (previously presented): The laser scanning system of claim 129, wherein said holographic optical elements are integrated in a rotating disc, and wherein said photodetector is mounted outside the outer periphery of the rotating disc.

Claim 132 (previously presented): The laser scanning system of claim 129, wherein at least one member of said first group  $G_1$  of holographic optical elements have symmetrical left skew angle characteristics with respect to the right skew angle characteristics of at least one corresponding member of said second group  $G_2$  of holographic optical elements.

Claim 133 (previously presented): The laser scanning system of claim 129, which comprises multiple holographic optical elements that simultaneously focus multiple scanning beams to overlapping regions in a 3-D scanning volume at varying focal distances (preferably, 2 inches or less difference in focal distance), which minimizes the effects of paper noise.

Claims 134-155 (canceled)